UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,962	03/31/2004	Seiichiro Sasaki	OKI 417	4886

7590 11/20/2006

RABIN & BERDO, P.C.
Suite 500
1101 14th Street
Washington, DC 20005

EXAMINER	
SEMENENKO, YURIY	
ART UNIT	**PAPER NUMBER**
2841	

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,962	SASAKI ET AL.	
	Examiner	Art Unit	
	Yuriy Semenenko	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 16-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 16-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Amendment filed on 09/20/2006 has been entered.
In response to the Office Action dated 05/23/ 2006, Applicants have amended claims 1-7. Claims 8-15 have been cancelled. Claims 16-23 are newly added.
Claims 1-7 and 16-23 are now pending in the application.

Claims

2. Claims 1-7 amendments, filed on 09/20/2006 are considered and acknowledged. The claims amendments are approved.

Response to Arguments

3. Applicant's arguments filed 09/20/2006 have been considered and acknowledged but they are not persuasive.

3.1. In response to Applicant's argument that Takaramoto does not disclose strips of a same width. Examiner notes that prior art admitted by Applicant discloses strips of a same width. Applicant's amendments of claims 1-7. and newly added claims 16-23 introducing geometrical dimensions of layer (strip). However, it has been held In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that change in shape and change in size of the configuration of the claimed device was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant. Further, it is common knowledge that plates of the capacitor are mutually parallel and equal each other.

3.2. In response to Applicant's argument that there is no suggestion to combine the references of Takaramoto and Appel, the Examiner pointed out both references disclose same subject matter as in the Application, namely metal-insulator-metal

structures. Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re Nomiya, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill on the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971). References are evaluated by what specific disclosures. In re Bozek, 163 USPQ 545 (CCPA) 1969. In this case references of Takaramoto and Appel discloses same subject matter, namely decreasing parasitic capacitance.

Drawings

4. Figures 9 and 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:
The amended claims 1 and newly added claim 21 introduce new limitations "a first metal strip" and "a second metal strip" and "a third metal strip which was not described in the specification,

Appropriate correction is required.

Claim Objections

6.1. Claims 1 and 22-23 are objected to because of the following informalities:
Claims 1 and 22: should be better -equal in wiring width- instead of "identical in wiring width".
Claim 5, lines 4-5: unclear article an or the should be in "an the external power supply"
Claim 5, line 7: one "the" is extra.
Claim 23, line 3: one "at" is extra.

Appropriate correction is required.

6.2. The amended claims 1 and newly added claim 21 introduce new limitations "a first metal strip" and "a second metal strip" and "a third metal strip. There is not any information about "strips" in the Specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7.1. Claims 1-7, 20 and 23 are rejected under 35U.S.C. 103(a) as being unpatentable over Takaramoto et al. (Patent # 6646860) hereinafter Takaramoto in view of Admitted by Applicant (Prior Art, hereinafter "APA") and in view of Appel (PGPub #2002/0113292) hereinafter Appel.

To apply prior art the Examiner consider "a layer" as "a strip" as applicant does.

As to claim 1: Takaramoto discloses in Fig. 1A a multilayered power supply line (column 5, lines 33-42) having a metal-insulator-metal structure (column 5, lines 1-15) and comprising: a first metal strip 28 that serves as a wiring metal (column 9, lines 39-66); a second metal strip 14 located below the first metal strip; and a third metal strip 26a (column 5, lines 14-16) that serves as a capacitor metal 12a, said third metal strip 26a being located between the first metal strip 28 and the second metal strip 14; wherein an insulator 12 is embedded into gap portions defined among the first metal strips, the second metal strips and the third metal strips, wherein the second metal strip is electrically connected to the first metal strip and thereby supplied with power identical in potential to the first metal strip, Fig. 1A and (column 5, lines 43-48).

except, Takaramoto doesn't explicitly teach the first metal strip and the second metal strip are identical in wiring width.

APA discloses in the "Background of the invention" section, at the time the invention was made, it was well know to use the first metal strip 92 and the second metal strip 94 are identical in wiring width, Fig. 9 and 10.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention the first metal strip and the second metal strip are identical in wiring width motivated by its known suitability for its intended use. See MPEP §2144.07.

except, Takaramoto doesn't explicitly teach the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel.

Appel discloses the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel motivated by its known suitability for its intended use. See MPEP §2144.07.
And further, it has been held In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that change in shape and change in size of the configuration of the claimed device was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant. Further, it is common knowledge that plates of the capacitor are mutually parallel and equal each other.

As to claim 2: Takaramoto as modified, discloses the multilayered power supply line according to claim 1, wherein the second metal strip 14, Fig. 1A and the third metal strip 26a are identical in potential to each other and the third metal strip is electrically connected to the first metal strip and thereby supplied with the power identical in potential to the first metal strip, Fig. 1A and (column 5, lines 43-48).

As to claim 3: Takaramoto discloses in Fig. 1A a multilayered power supply line according to claim 2, wherein the first metal strip 28 is supplied with a ground potential, and the ground potential is supplied even to the second metal strip 14 and the third metal strip 26a, Fig. 1A. Although, Takaramoto doesn't explicitly teach the first metal strip is supplied with a potential source of an external power supply, and the source potential of the external power supply is supplied even to the second metal and the third metal strip at time the invention was made, it was old and well-know to connect one terminal of capacitor or to potential source and another connect to the ground or vice versa. And further, it has been held to be within the general skill of a worker in the art to make plural parts unitary as matter of obvious engineering choice, In re Larson, 144 USPTQ 347 (CCPA 1965); In re Lockart, 90 USPQ 214 (CCPA 1951).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention the first metal strip is

supplied with a potential source of an external power supply, and the source potential of the external power supply is supplied even to the second metal and the third metal strip to provide options for connecting capacitors.

As to claim 4: Takaramoto, as modified, discloses the multilayered power supply line according to claim 2, wherein the first metal strip 28, Fig. 1A is supplied with a ground potential, and the ground potential is supplied even to the second metal strip 14 and the third metal strip 26a, Fig. 1A.

As to claim 5: Takaramoto, as modified, discloses the multilayered power supply line having all of the claimed features as discussed above with respect to claim 1, which includes a plurality of strips comprised of the first metal strip 28, Fig. 1A, the second metal strip 14 and the third metal strip 26a (column 5, lines 14-16); wherein some of the strips 16a supplied with a source potential of an external power supply 30 and other of the strips 14, 28 are supplied with a ground potential (column 5, lines 43-48), whereby capacitors 12a, Fig. 1A are configured by potential differences between the first metal strip 28 and the second metal strip 14 and between the first metal strip 28, Fig. 10A and the third metal strip 70,

except, Takaramoto does not discloses the source potential and the ground potential alternate in first metal strips which are disposed in generally planar layer consisting of a plurality of the first metal strip, wherein the source potential and the ground potential alternate in adjacent strips of the first metal strip and the third metal strip, and wherein the potential is similar in adjacent strips of the first metal strip and the second metal strip.

Appel teaches in Fig. 2 the source potential and the ground potential alternate in first metal strips (page 1, [0016]) which are disposed in generally planar layer consisting of a plurality of the first metal strip, Fig.2, wherein the source potential and the ground potential alternate in adjacent strips of the first metal strip, and wherein the potential is similar in adjacent strips of the first metal strip and the second metal strip Fig. 1.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention the source potential and the ground potential alternate in first metal strips which are disposed in generally planar layer consisting of a plurality of the first metal strip, wherein the source potential and the ground potential alternate in adjacent strips of the first metal strip and the third metal strip, and wherein the potential is similar in adjacent strips of the first metal strip and the second metal strip, because Appel suggests at Abstract that such structure increase capacitance for MIM.

As to claim 6: Takaramoto, as modified, discloses in Fig. 1 the multilayered power supply line, having all of the claimed features as discussed above with respect claim 5, further comprising: a first 3-strip multilayered power supply line having a second metal strip 68, Fig. 10A supplied with the ground potential and a third metal strip 48 supplied with the source potential of the external power supply, and a second 3-layer multilayered power supply line having a second metal strip 18a supplied with the source potential of the external power supply and a third metal strip 26a supplied with the ground potential. Although Takaramoto did not disclose a plurality of connected 3-strip multilayered power supply lines, Takaramoto teaches a first and second 3-strip multilayered power supply lines and so it is old and well known to a first and second 3-strip multilayered power supply line for the purpose of increasing the capacity. And further, it has been held to be within the general skill of a worker in the art to make plural parts unitary as matter of obvious engineering choice, In re Larson, 144 USPTQ 347 (CCPA 1965); In re Lockart, 90 USPQ 214 (CCPA 1951). Further, it has been held In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (Claims at issue were directed to a water-tight masonry structure .....The claimed water seal has a "web" which lies ** in the joint, and a plurality of "ribs" Although the reference did not disclose a plurality of ribs, the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced.).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention and a second 3-strip multilayered power supply for the purpose of increasing the capacity.

As to claim 7: Takaramoto, as modified, discloses the multilayered power supply line according to claim 5, which includes, in the first metal strip 28, a capacitor 12a, Fig. 1A a made up of a parasitic capacitance (column 3, lines 28-38) developed between a metal strip 22 supplied with the source potential of the external power supply 30 and a metal strip 24 supplied with the ground potential.

As to claim 20: Takaramoto, as modified, discloses the multilayered power supply line having all of the claimed features as discussed above with respect to claim 1,

except, Takaramoto does not discloses the plurality of strips are mutually parallel and are arranged in a rectangular array.

Appel teaches in Fig. 1, 2 the plurality of strips are mutually parallel and are arranged in a rectangular array.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention the plurality of strips are mutually parallel and are arranged in a rectangular array in order to increase capacitance for MIM, as taught by Appel (Abstract).

As to claim 23: Takaramoto, as modified, discloses the multilayered power supply line having all of the claimed features as discussed above with respect claim 1,

except Takaramoto does not explicitly teach at least one of a source potential connection of an external power supply and a ground potential connection connected at least one end of the multilayered power supply line, whereby electricity is conductable lengthwise through the multilayered power supply line.

APA discloses at least one of a source potential connection of an external power supply and a ground potential connection connected at least one end of the

multilayered power supply line, whereby electricity is conductable lengthwise through the multilayered power supply line (specification, page 2, lines 10-19).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention at least one of a source potential connection of an external power supply and a ground potential connection connected at least one end of the multilayered power supply line, whereby electricity is conductable lengthwise through the multilayered power supply line in order to provide voltage potential to semiconductor devices.

7.2. Claims 21-22 are rejected under 35U.S.C. 103(a) as being unpatentable over APA in view of Takaramoto and in view of Appel.

To apply prior art the Examiner consider "a layer" as "a strip" as applicant does.

As to claim 21: APA discloses a multilayered power supply line having a metal-insulator-metal structure (page 1-3, the "Background of the invention" section) and consisting of: a first metal strip 92, Fig. 10 that serves as a wiring metal; a second metal strip 94 located below the first metal strip; and electrical connections between the first and second metal strips; wherein the first metal strip, the second metal strip are lengthwise mutually parallel; wherein an insulator is embedded into gap portions defined among the first metal strip, the second metal strip Fig. 10, and wherein the second metal strip is electrically connected to the first metal strip and thereby supplied with power identical in potential to the first metal strip,

except APA does not disclose two things :

1. a third metal strip that serves as a capacitor metal, said third metal strip being located between the first metal strip and the second metal strip; and electrical connections between the first arid third metal strips;
2. the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel;

Takaramoto discloses a third metal strip 26a (column 5, lines 14-16) that serves as a capacitor metal 12a, said third metal strip 26a being located between the first metal strip 28 and the second metal strip 14; and the third metal strip is electrically connected to the first metal strip and thereby supplied with the power identical in potential to the first metal strip, Fig. 1A and (column 5, lines 43-48).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for APA to include in his invention a third metal strip that serves as a capacitor metal, said third metal strip being located between the first metal strip and the second metal strip; and electrical connections between the first arid third metal stripsin order to decrease the parasitic capacitance, as taught by Takaramoto (Abstract, line 8-10)

Appel discloses the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for APA to include in his invention the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel motivated by its known suitability for its intended use. See MPEP §2144.07.

As to claim 22: APA ,as modified, discloses the multilayered power supply line according to claim 21, wherein the first metal strip 92, Fig. 10 and the second metal strip 94 are identical in wiring width,(see Fig. 9.)

7.3. Claims 16-19 are rejected under 35U.S.C. 103(a) as being unpatentable over Takaramoto in view of APA and in view of Appel as applied to claim 1 above, and in view of Hajimiri et al. (PGPub. #2003/0206389) hereinafter Hajimiri.

To apply prior art the Examiner consider "a layer" as "a strip" as applicant does.

As to claims 16-19: Takaramoto, as modified, discloses the multilayered power supply line having all of the claimed features as discussed above with respect to claim 1,

Although, Takaramoto, as modified, teaches only the first metal strip has the same wiring width of the second metal strip (see discussion with respect to claim 1 above), Hajimiri, for example, discloses in his invention and in also in the "Background of the invention" section, at the time the invention was made, it was well know different shapes and relative sizes of the strips for capacitor structures, (Hajimiri, Fig.2-9). Further, it has been held "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) And furthermore in re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) held that limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Takaramoto to include in his invention the third metal strip has the same wiring width of the first metal strip and the second metal strip, or the third metal strip is narrower than the wiring width of the first metal strip and the second metal strip, or the third metal strip has the same wiring width of the first metal strip and the second metal strip or the third metal strip is narrower than the wiring width of the first metal strip and the second metal strip, motivated by its known suitability for its intended use. See MPEP §2144.07.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571)- 272-2800 ext. 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YS

11/8/06

DEAN A. REICHARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800